United Cooperative Services

A Quick Overview of Technical Requirements of Interconnection and Operation of Distributed Generation Resources

- The DG installation must meet all applicable national, state, and local construction and safety codes as well as all requirements of UCS and Brazos.

- The DG installation must be equipped with protective hardware and software designed to prevent the generator from being connected to a de-energized circuit owned by UCS. The DG installation shall not energize the PCC when the UCS system has been de-energized for any reason.

- The DG installation must be equipped with protective hardware and software designed to prevent the connection or parallel operation of the DG installation with the UCS system unless the UCS system service voltage and frequency is of nominal value.

- The DG installation shall not degrade the voltage provided to other UCS members to service voltages outside the limits of ANSI C84.1, Range A.

- The UCS distribution system is a four wire multi-grounded neutral system. All grounding must ensure that fault conditions are not worsened by the interconnection of the DG installation. For example in the UCS system, the voltages of the unfaulted phases during a single line to ground fault with no DG installation will be the limit of the voltages of the same unfaulted phases during a single line to ground fault with the DG installation.

- The DG installation shall follow the UCS system frequency with the range of 59.3 Hz to 60.5 Hz (on a 60 Hz nominal value). The DG installation shall disconnect from the UCS system within 0.16 seconds if the frequency goes outside of the range specified.

- The DG installation shall synchronize with the UCS system without causing a voltage fluctuation at the PCC greater than +-5% of the operating voltage. Synchronism shall be automatically performed by hardware and software.

- The DG installation shall be equipped with an accessible (by Cooperative personnel), visible safety disconnect by means of which the DG installation and all protective devices and control apparatus are able to be disconnected entirely from the circuits supplied by the DG installation. See the safety disconnect requirements in the UCS Distributed Generation Procedures & Guidelines Manual for Members for detailed disconnect requirements.

- Interconnection system response to abnormal voltages shall include disconnecting from the UCS system within the following limits.

Voltage Range (Volts, 120V nominal)	Clearing Time (sec)
V < 60	0.16
60 < V < 106	2.0
132 < V < 144	1.0
V > 144	0.16

- The DG installation shall disconnect from the UCS system in the case of a fault condition on the line to which it is connected.

- The DG installation shall individually be coordinated with the UCS protection schemes that are utilized on the line to which it is connected.

- The DG installation shall not inject DC current greater than 0.5% of the full rated output current at the point of interconnection.

- The DG installation shall not create voltage flicker outside of industry accepted voltage flicker curves and in no case shall the flicker exceed 5% unless agreed to by UCS.

- The DG installation shall not inject harmonic currents into the UCS system outside the limits as stated in IEEE 519-1992. In no cases shall the TDD of the current be above 5%.

- The DG installation shall in no way create electromagnetic interference that causes misoperation of UCS system components.

- The DG installation shall have the capability to withstand voltage and current surges in accordance with the environments defined in IEEE/ANSI C62.41 or IEEE C37.90 as appropriate.

- Islanding is not acceptable with the DG installation. Islanding is when a DG installation keeps a portion of the UCS system energized when power has been disconnected for some reason.

- The DG installation shall produce power at a minimum 95% power factor whether leading or lagging. The DG installation shall strive to produce power at unity power factor.